We claim:

1. Block or graft copolymers comprising a polycationic block and at least one non-tissue binding block, wherein the polycationic block is either a substantially linear polycationic block with a molecular weight of 100,000 Daltons or more, or a dendritic polycationic block with a molecular weight sufficient to provide at least 8 cationic charges.

2. The copolymer of claim 1, wherein the non-tissue-binding block has a molecular weight in excess of 5,000 daltons.

3. The copolymer of claim 1, where the non-tissue-binding block has a molecular weight in excess of 50,000 daltons.

4. The copolymer of claim 1 wherein the non-tissue-binding block is selected from the group consisting of polyethylene glycol, mixed polyalkylene oxides having a solubility of at least one gram/liter in aqueous solutions, neutral water-soluble polysaccharides, polyvinyl alcohol, poly-N-vinyl pyrrolidone, non-cationic poly(meth)acrylates and combinations thereof.

5. The copolymer of claim 5 wherein the non-tissue-binding block comprises polyethylene glycol.

6. The copolymer of claim 1 wherein the polycationic block is selected from the group consisting of natural and unnatural polyamino acids having net positive charge at neutral pH, positively charged polysaccharides, and positively charged synthetic polymers.

7. The copolymer of claim 1 wherein the polycationic block comprises monomeric units selected from the group consisting of lysine, histidine, arginine and ornithine.

8. The copolymer of claim 7 wherein the positively charged polysaccharide is selected from the group consisting of chitosan, partially deacetylated chitin, and amine-containing derivatives of neutral polysaccharides.

9. The copolymer of claim 6 wherein the positively charged synthetic polymer is selected from the group consisting of polyethyleneimine,

polyamino(meth)acrylate, polyaminostyrene, polyaminoethylene, poly(aminoethyl)ethylene, polyaminoethylstyrene, and N-alkyl derivatives thereof.

10. The copolymer of claim 1 further comprising a pharmaceutically acceptable carrier.

11. The copolymer of claim 1 further comprising a bioactive agent.

12. The copolymer of claim 11 wherein the bioactive agent is chemically coupled to the polymer.

13. A polymeric coating on a macroscopic surface, comprising layers of polycationic and polyanionic materials.

14. The coating of claim 13, wherein the coating is applied as alternating polycationic and polyanionic layers.

15. The coating of claim 13, wherein there are at least 4 layers.

16. The coating of claim 13, wherein there are at least 6 layers.

17. The coating of claim 13, wherein the polycation is selected from the group consisting of natural and unnatural polyamino acids having net positive charge at neutral pH, positively charged polysaccharides, and positively charged synthetic polymers.

18. The coating of claim 17, wherein the polycation comprises monomeric units selected from the group consisting of lysine, histidine, arginine and ornithine.

19. The coating of claim 13, wherein the polyanion is selected from the group consisting of alginate, carrageenan, furcellaran, pectin, xanthan, hyaluronic acid, heparin, heparan sulfate, chondroitin sulfate, dermatan sulfate, dextran sulfate, poly(meth)acrylic acid, oxidized cellulose, carboxymethyl cellulose, crosmarmelose, synthetic polymers and copolymers containing pendant carboxyl groups, polyaminoacids of predominantly negative charge, and biocompatible polyphenolic materials.

20. The coating of claim 19, wherein the polyanion is selected from the group consisting of alginate, pectin, carboxymethyl cellulose, heparin and hyaluronic acid.

21. The coating of claim 13 further comprising a bioactive agent.

22. The coating of claim 21 wherein the bioactive agent is chemically coupled to at least one of the polymers.

23. The coating of claim 13 wherein the surface is a tissue surface.

24. The coating of claim 13 wherein the surface is a surface of a medical device.

25. The coating of claim 13 wherein at least one layer of polyanionic or polycationic polymer further comprises a covalently bound non-tissue-binding block.

26. The coating of claim 25 wherein the non-tissue-binding block is in at least the outermost layer.

27. A method for encapsulating, plugging, sealing, or supporting a macroscopic surface, comprising depositing successive layers of polycationic and polyanionic material on the surface.

28. The method of claim 27, wherein the deposition of the layers of polycationic and polyanionic materials minimizes or prevents tissue adhesion, minimizes or prevents postoperative adhesion, prevents thrombosis, prevents implantation of cancerous cells, coats tissue to encourage healing or prevent infection, or enhances the local delivery of bioactive agents.

29. The method of claim 27, wherein the polycationic materials are selected from the group consisting of poly(D-lysine), poly(ornithine), poly(arginine), poly(histidine), poly(aminostyrene), poly(aminoacrylate), poly (N-methyl aminoacrylate), poly (N-ethylaminoacrylate), poly(N,N-dimethyl aminoacrylate), poly(N,N-diethylaminoacrylate), poly(aminomethacrylate), poly(N-methyl amino-methacrylate), poly(N-ethyl aminomethacrylate), poly(N,N-dimethyl aminomethacrylate), poly(N,N-diethyl aminomethacrylate), poly(ethylene imine), polymers including quaternary amine groups, and natural or synthetic cationic polysaccharides.

30. The method of claim 27, wherein the polycationic materials are selected from the group consisting of polylysine, polyornithine and polyethylene imine.

31. The method of claim 27, wherein the polyanionic materials are selected from the group consisting of alginate, carrageenan, furcellaran, pectin, xanthan, hyaluronic acid, heparin, heparan sulfate, chondroitin sulfate, dermatan sulfate, dextran sulfate, poly(meth)acrylic acid, oxidized cellulose, carboxymethyl cellulose, crosmarmelose, synthetic polymers and copolymers containing pendant carboxyl groups, polyaminoacids of predominantly negative charge, and biocompatible polyphenolic materials.

32. The method of claim 27, wherein the polyanionic material is alginate.

33. The method of claim 27, wherein the material further comprises a bioactive agent.

34. The method of claim 33, wherein the bioactive agent is chemically coupled to one or more of the polymers.

35. The method of claim 28 wherein the site where adhesion is to be prevented is a region where tissue has been injured.

36. The method of claim 28 wherein the site where adhesion is to be prevented has been surgically cut.

37. The method of claim 28 wherein the site where thrombosis or adhesion is to be prevented is the lining of a blood vessel that has been damaged.

38. The method of claim 28 wherein the tissue to be prevented from attaching are cancerous or tumor cells.

39. The method of claim 28 wherein the tissue is an organ or lumen of the body which contacts other organs that have also been injured.

40. The method of claim 28 wherein the tissue has been processed.

41. A method for coating a non-biological surface comprising applying to the surface a copolymer or sequential layers of polycationic and polyanionic materials, wherein:

the copolymer includes a polycationic block and at least one non-tissue binding block, wherein the polycationic block is either a substantially linear polycationic block with a molecular weight of 100,000 Daltons or more, or a dendritic polycationic block with a molecular weight sufficient to provide at least 8 cationic charges.

42. The method of claim 41, wherein the surface is a metal surface.

43. The use of the coating of claim 13 for treatment of a medical condition.

44. The use of the coating of claim 13 for coating the surface of a medical device.

45. The use of the copolymer of claim 1 for treatment of a medical condition.

46. The use of claim 45 wherein the medical treatment is selected from the group consisting of minimization or prevention of postoperative adhesions, minimization or prevention of thrombosis, minimization or prevention of implantation of cancerous cells, coating of a tissue surface to encourage healing, coating of a tissue surface to prevent infection, and applying a coating to enhance the local delivery of drugs.

47. The use of the copolymer of claim 1 for coating the surface of a medical device.